IN THE CLAIMS

1. (Amended). A method for processing a measured signal to extract a signal component and suppress a noise component of the measured signal, wherein the signal component is a substantially periodic signal characterized by a substantially well-defined peak-to-peak intensity value, the method comprising the steps of:

(i) determining upper and lower envelopes of the measured signal; and

(ii) analyzing the upper and lower envelope values to extract the signal component from the measured signal, wherein the step analyzing the upper and lower envelope values includes the step of determining a median of the difference between the upper and lower envelope values, as an alternating value in the signal component.

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2. (Cancelled).

2 ~~3~~. (Original). The method, as set forth in claim 1, wherein the step of analyzing the upper and lower envelope values includes the step of determining a median of the upper envelope values, as a constant value in the signal component.

3 ~~4~~. (Original). The method, as set forth in claim 1, wherein the step of analyzing the upper and lower envelope values includes the step of determining a median of the half of the sum of the upper and lower envelope values, as a constant value in the signal component.

4 ~~5~~. (Original). The method, as set forth in claim 1, wherein the measured signal is a physiological signal.

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5 ~~6~~. (Original). The method, as set forth in claim 3 ~~4~~, wherein the signal component is pulsatile blood-related signal.

6 ~~7~~. (Original). The method, as set forth in claim 5 ~~6~~, wherein the pulsatile blood-related signal is indicative of oxyhemoglobin saturation level.

11 ~~8~~. (Amended). A ~~The~~ method~~, as set forth in claim 7~~ for processing a measured signal to extract a signal component and suppress a noise component of the measured signal, wherein the signal component is a substantially periodic signal characterized by a substantially well-defined peak-to-peak intensity value, the measured signal being a physiological signal, the signal component being a pulsatile blood-related signal indicative of oxyhemoglobin saturation level, the method comprising the steps of:

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(i) determining upper and lower envelopes of the measured signal; and

(ii) analyzing the upper and lower envelope values to extract the signal component from the measured signal, wherein the step of analyzing the upper and lower envelope values includes the step of determining a median of the difference between the upper and lower envelope values as an AC component of the pulsatile blood-related signal, and determining a median of the upper envelope values as a DC component of the pulsatile blood-related signal.

12 ~~9~~. (Amended). A ~~The~~ method~~, as set forth in claim 7~~ for processing a measured signal to extract a signal component and suppress a noise component of the measured signal, wherein the signal component is a substantially periodic signal characterized by a substantially well-defined peak-to-peak intensity value, the measured

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signal being a physiological signal, the signal component being a pulsatile blood-related signal indicative of oxyhemoglobin saturation level, the method comprising the steps of:

(i) determining upper and lower envelopes of the measured signal; and

(ii) analyzing the upper and lower envelope values to extract the signal component from the measured signal, wherein the step of analyzing the upper and lower envelope values includes the step of determining a median of the difference between the upper and lower envelope values as an AC component of the pulsatile blood-related signal, and determining a median of a half of the sum of the upper and lower envelope values as a DC component of the pulsatile blood-related signal.

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7 ~~10~~. (Original). The method, as set forth in claim 1, wherein the measured signal is a response of a sample to the application of an external field.

8 ~~11~~. (Original). The method, as set forth in claim 7 ~~10~~, wherein the measured signal is a light response of the sample to incident light.

9 ~~12~~. (Original). The method, as set forth in claim 7 ~~10~~, wherein the sample is biological.

10 ~~13~~. (Original). The method, as set forth in claim 1, for use with a measurement device for non-invasive measurements of patient's blood and heart conditions, the signal component being a pulsatile blood-related signal and containing a signal component characterized by a specific asymmetric shape, the method further comprising the steps of:

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- defining a kernel function being a derivative of a Gaussian with parameters matching the characteristics of the signal component with the asymmetric shape; and

- applying spectral filtering to the measured signal with the kernel function, thereby enhancing the signal component characterized by the specific asymmetric shape relative to a noise component in the filtered signal, to thereby enable further processing of the enhanced pulse signal to determine the heart rate.

13 ~~14~~. (Amended). A ~~The~~ method ~~, as set forth in claim 13,~~ for processing a measured signal to extract a signal component and suppress a noise component of the measured signal, wherein the signal component is a substantially periodic signal characterized by a substantially well-defined peak-to-peak intensity value, the method for use with a measurement device for non-invasive measurements of patient's blood and heart conditions, the signal component being a pulsatile blood-related signal and containing a signal component characterized by a specific asymmetric shape and comprising the steps of:

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determining upper and lower envelopes of the measured signal;

analyzing the upper and lower envelope values to extract the signal component from the measured signal;

defining a kernel function being a derivative of a Gaussian with parameters matching the characteristics of the signal component with the asymmetric shape; and

applying spectral filtering to the measured signal with the kernel function, thereby enhancing the signal component characterized by the specific asymmetric shape relative to a noise component in the filtered signal, to thereby enable further processing of the

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enhanced pulse signal to determine the heart rate, wherein the step of analyzing the upper and lower envelope values includes the steps of determining a median of the difference between the upper and lower envelope values of the measured signal as an AC component of the pulsatile blood-related signal component, and determining a median of the upper envelope values as a DC component of the pulsatile blood-related signal component~~;~~.

14 ~~15~~. (Amended). A ~~The~~ method~~, as set forth in claim 13~~ for processing a measured signal to extract a signal component and suppress a noise component of the measured signal, wherein the signal component is a substantially periodic signal characterized by a substantially well-defined peak-to-peak intensity value, the method for use with a measurement device for non-invasive measurements of patient's blood and heart conditions, the signal component being a pulsatile blood-related signal and containing a signal component characterized by a specific asymmetric shape and comprising the steps of:

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determining upper and lower envelopes of the measured signal;

analyzing the upper and lower envelope values to extract the signal component from the measured signal;

defining a kernel function being a derivative of a Gaussian with parameters matching the characteristics of the signal component with the asymmetric shape; and

applying spectral filtering to the measured signal with the kernel function, thereby enhancing the signal component characterized by the specific asymmetric shape relative to a noise component in the filtered signal, to thereby enable further processing of the

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enhanced pulse signal to determine the heart rate, wherein the step of analyzing the upper and lower envelope values includes the steps of determining a median of the difference between the upper and lower envelope values of the measured signal as an AC component of the pulsatile blood-related signal component, and determining a median of a half of the sum of the upper and lower envelope values as a DC component of the pulsatile blood-related signal component.

16. (Cancelled).

17. (Cancelled).

18. (Cancelled).

19. (Cancelled).

20. (Cancelled).

21. (Cancelled).

22. (Cancelled).

23. (Cancelled).

24. (Cancelled).

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15 ~~25~~. (Amended). A pulse oximeter comprising:

(a) a measurement device operable to illuminate a measurement location with incident light of predetermined frequencies, detect a light response of the measurement

location to said incident light, and generate a measured signal indicative thereof including a signal component representative of a pulsatile blood-related signal; and

(b) a control unit connectable to the measurement device for receiving and processing the measured signal, the control unit comprising a data processing and analyzing utility preprogrammed to determine upper and lower envelopes of the measured signal, and analyze the upper and lower envelope values to extract said pulsatile blood-related signal component from a noise component in the measured signal, wherein the analyzing of the upper and lower envelope values comprises determining a median of the difference between the upper and lower envelope values as an AC component of the pulsatile blood-related signal, and determining a median of the upper envelope values as a DC component of the pulsatile blood-related signal.

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26. (Cancelled).

17 ~~27~~. (Amended). A ~~The~~ pulse oximeter~~, as set forth in claim 25~~ comprising:

(a) a measurement device operable to illuminate a measurement location with incident light of predetermined frequencies, detect a light response of the measurement location to said incident light, and generate a measured signal indicative thereof including a signal component representative of a pulsatile blood-related signal; and

(b) a control unit connectable to the measurement device for receiving and processing the measured signal, the control unit comprising a data processing and analyzing utility preprogrammed to determine upper and lower envelopes of the measured signal, and analyze the upper and lower envelope values to extract said pulsatile blood-related signal component from a noise component in the measured signal, wherein the

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analyzing of the upper and lower envelope values comprises determining a median of the difference between the upper and lower envelope values as an AC component of the pulsatile blood-related signal, and determining a median of a half of the sum of the upper and lower envelope values as a DC component of the pulsatile blood-related signal component.

16 ~~28~~. (Original). The pulse oximeter, as set forth in claim ~~25~~ 15, for determining a patient's heart rate, the measured signal comprising a blood-related signal component characterized by a specific asymmetric shape, the control unit being preprogrammed to process the measured signal by filtering it with a predefined kernel function being a derivative of a Gaussian with parameters matching the characteristics of said signal component, thereby enhancing said signal component characterized by the specific asymmetric shape relative to a noise component in the filtered measured signal.

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29. (Cancelled).

30. (Cancelled).

31. (Cancelled).

32. (Cancelled).

33. (Cancelled).

18 ~~34~~. (Amended). A method for determining a parameter of a signal, comprising:

(i) determining upper and lower envelopes of the signal, and

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(ii) analyzing the upper and lower envelopes to extract a signal component of the signal; and,

(iii) determining the parameter of the signal as a function of the signal component<u>, wherein the step of analyzing the upper and lower envelopes to extract a signal component of the signal includes the step of determining a median of the difference between upper and lower envelope values</u>.

19 ~~35~~. (Original). A method, as set for in claim ~~34~~ 18, wherein the signal component is substantially periodic.

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20 ~~36~~. (Original). A method, as set forth in claim ~~34~~ 18, wherein the signal component has a substantially defined peak-to-peak intensity value.

21 ~~37~~. (Original). A method, as set forth in claim ~~34~~ 18, wherein the step of analyzing the upper and lower envelopes includes the step of suppressing noise.

22 ~~38~~. (Original). A method, as set forth in claim ~~34~~ 18, including the steps of applying an external field to a sample and sensing the signal, wherein the signal is a response of the sample to the external field.

23 ~~39~~. (Original). A method, as set forth in claim ~~34~~ 18, including the steps of applying incident radiation to a sample and sensing the signal, where the signal is a response of the sample to the incident radiation.

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24 ~~40~~. (Original). A method, as set forth in claim 23 ~~39~~, wherein the parameter of the signal corresponds to a physiological parameter of the sample.

25 ~~41~~. (Original). A method, as set forth in claim 24 ~~40~~, wherein the physiological parameter is pulsatile blood-related.

26 ~~42~~. (Original). A method, as set forth in claim 24 ~~40~~, wherein the physiological parameter is oxyhemoglobin saturation.

C ~~43~~. (Cancelled).

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27 ~~44~~. (Amended). A method, as set forth in claim 18 ~~34~~ ~~43~~, wherein the median is determined as an alternating value in the signal component.

28 ~~45~~. (Amended). A method, as set forth in claim 18 ~~34~~ 43, wherein the median is determined as a constant value in the signal component.

29 ~~46~~. (Amended). A method for determining a parameter of a signal, ~~as set forth in claim 34,~~ comprising:

(i) determining upper and lower envelopes of the signal, and

(ii) analyzing the upper and lower envelopes to extract a signal component of the signal; and,

(iii) determining the parameter of the signal as a function of the signal component, wherein the step of analyzing the upper and lower envelopes to extract a signal component of the signal includes the steps of:

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- determining a median difference between the upper and lower envelope values as an AC component of the signal component; and,
- determining a median of the upper envelope as a DC component of the signal component.

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47. (Cancelled).

48. (Cancelled).

49. (Cancelled).

50. (Cancelled).

51. (Cancelled).

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